CLAIMS:

1. A method of reducing an interference noise signal fraction in a microphone signal which contains the interference noise signal fraction coming from at least one interference noise source and a speech signal fraction coming from a speech signal source, said method comprising the following steps:

- reception of the microphone signal containing the interference noise signal fraction and the speech signal fraction,
- reception of at least one interference noise reference signal by means of in each case one inversely operated loudspeaker, where the loudspeaker or loudspeakers are positioned such that the signal fraction coming from the interference noise sources in the respective interference noise reference signal is at least as high as the signal fraction coming from the speech signal source in this interference noise reference signal,
- in the case of just one interference noise reference signal, determination of an estimate of the interference noise signal fraction from the interference noise reference signal using a method of signal estimation theory,
- in the case of more than one interference noise reference signal, determination of in each case one provisional estimate of the interference noise signal fraction from each of the interference noise reference signals using a method of signal estimation theory and subsequent determination of the estimate of the interference noise signal fraction in the microphone signal by combining these provisional estimates of the interference noise signal fraction,
- reduction of the interference noise signal fraction in the microphone signal by deducting the estimate of the interference noise signal fraction from the microphone signal.

2. A method as claimed in claim 1, characterized in that in an additional method step, besides the determination of a first estimate of the interference noise signal fraction by means of at least one interference noise reference signal, a determination of a second estimate of the interference noise signal fraction is carried out by means of the microphone signal itself and a third estimate is determined from a linear combination of the first and second estimates of the interference noise signal fraction, and in that the reduction of the interference

noise signal fraction in the microphone signal is effected by deducting this estimate from the microphone signal.

3. A method as claimed in claim 1, characterized in that in the case of more than one interference noise reference signal the combination of the provisional estimates of the interference noise signal fraction consists of the multiplication of any provisional estimate of the interference noise signal fraction by in each case one weighting factor and the subsequent summation of the weighted provisional estimates of the interference noise signal fraction that are thus obtained.

4. A method as claimed in any of claims 1 to 3, characterized in that the deduction of the estimate of the interference noise signal fraction from the microphone signal is carried out using optimal filtering.

5. A method as claimed in any of claims 1 to 3, characterized in that the deduction of the estimate of the interference noise signal fraction from the microphone signal is carried out using the method of spectral subtraction.

6. A method as claimed in any of claims 1 to 5, characterized in that the microphone signal reduced by the interference noise signal fraction is fed to a speech recognition device.

7. A method as claimed in any of claims 1 to 5, characterized in that the microphone signal reduced by the interference noise signal fraction is fed to a telecommunications device.

8. A method as claimed in any of claims 1 to 7, characterized in that the microphone signal and the at least one interference noise reference signal are received in a means of transport and the loudspeaker or loudspeakers used form part of a loudspeaker system present in the means of transport.

9. An apparatus for carrying out the method as claimed in claim 1, which comprises at least the following components:

- a signal processor for determining the estimate of the interference noise signal fraction and for deducting this estimate from the microphone signal,
- at least one microphone which is coupled to the signal processor and is provided as a receiver for the microphone signal,
- at least one loudspeaker which is coupled to the signal processor and is provided as a receiver for the interference noise reference signal.